Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Withdrawn) The use of an isolated polynucleotide in the development of a medicament for the prevention and treatment of diseases and medical conditions in which proton homeostasis is imbalanced; said polynucleotide is selected from one of the groups consisting of:
(a) an isolated polynucleotide comprising the polynucleotide sequence of human OGR1 (accession number: NM_003485.1), rat OGR1 (accession number: XM_234483), mouse OGR1 (accession number: NM_175493), bovine OGR1 (accession number: NM_174329), preferably human OGR1 (accession number: NM_003485.1), human GPR4 (accession number: NM_005282), mouse GPR4 (accession number: NM_175668), human TDAG8 (accession number: NM_003608) and mouse TDAG8 (accession number: NM_008152);
(b) an isolated polynucleotide encoding a proton sensing GPCR polypeptide sequence having at least 20% identity to the polypeptide sequence of SEQ ID NO: 1;
(c) an isolated polynucleotide encoding a proton sensing GPRC polypeptide sequence having at least 20% identity to the polypeptide sequence of SEQ ID NO: 3;
(d) an isolated polynucleotide encoding a proton sensing GPRC polypeptide sequence having at least 20% identity to the polypeptide sequence of SEQ ID NO: 4;
(f) an isolated polynucleotide comprising the polynucleotide sequence of human OGR1 (accession number: NM_003485.1), rat OGR1 (accession number: XM_234483), mouse OGR1 (accession number: NM_175493), bovine OGR1 (accession number: NM_174329), preferably human OGR1 (accession number: NM_003485.1), human GPR4 (accession number: NM_005282), mouse GPR4 (accession number: NM_175668), human TDAG8 (accession number: NM_003608) and mouse TDAG8 (accession number: NM_008152);
(g) the polynucleotide sequences of human OGR1 (accession number: NM_003485.1), rat OGR1 (accession number: XM_234483), mouse OGR1 (accession number: NM_175493), bovine OGR1 (accession number: NM_174329), preferably human OGR1 (accession number: NM_003485.1), human GPR4 (accession number: NM_005282), mouse GPR4 (accession

number: NM_175668), human TDAG8 (accession number: NM_003608) and mouse TDAG8 (accession number NM_008152); and
(h) polynucleotides in (a) to (g) which encode for a polypeptide that show a phi dependent Inositol phosphate formation in CCL39 hamster fibroblast cells or a pH dependent signal in the cAMP luciferase reporter assay in CHOK1 CRE-luc cells or CCL39 CRE-luc cells.

6. (Withdrawn) The use of an antibody, which specifically binds to a polypeptide of the claim 1, for the manufacture of a medicament for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced;
a pharmaceutical composition comprising an antibody for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalances, said antibody specifically binds to a polypeptide of the claim 1; or
a method of prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising administering to a subject in need of such prevention and/or treatment an effective amount of an antibody, said antibody specifically binds to a polypeptide of claim 1.

7. (Currently amended) A method for screening for a candidate compound that antagonizes or agonizes a GPR4 related polypeptide ~~selected among the group consisting of:~~

~~i) a polypeptide encoded by a polynucleotide comprising the polynucleotide sequence of human GPR4 (accession number: NM_005282);~~

~~ii) the polypeptide of SEQ ID NO: 3; or,~~

~~iii) a polypeptide~~ having at least 95% identity to the polypeptide sequence of SEQ ID NO: 3~~,~~

said method comprising~~:~~ ~~the step of~~

a) contacting said GPR4 related polypeptide with a candidate compound~~,~~ under ~~appropriate~~ pH conditions~~,~~ selected to stimulate said GPR4 related polypeptide to produce a GPR4 signal,

b) determining whether said candidate compound is able to increase or decrease ~~a pH-dependent signalgenerated by~~ said GPR4 signal wherein said candidate compound is an agonist or antagonist if said candidate compound is capable of increasing or decreasing said signal ~~is a compound that agonizes or antagonizes said GPR4 related polypeptide~~, respectively.

8. (Cancelled)

9. (Cancelled)

10. (Withdrawn) A method of prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising administering to a subject in need of such

prevention and/or treatment an effective amount of an antagonist obtainable from the method of claim 7.

11. (Withdrawn) A method of prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising administering to a subject in need of such prevention and/or treatment an effective amount of an agonist obtainable from the method of claim 8.

12. (Withdrawn) A pharmaceutical composition for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising an antagonist obtainable from the method of claim 7.

13. (Withdrawn) A pharmaceutical composition for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalanced comprising an agonist obtainable from the method of claim 8.

14. (Withdrawn) A diagnostic kit comprising an antibody against a polypeptide according to claim 1.

15. (Withdrawn) A diagnostic kit comprising a pharmaceutical preparation for the prevention and/or treatment of diseases and medical conditions in which proton homeostasis is imbalances, said pharmaceutical preparation comprising an antibody against a polypeptide according to claim 1.

16. (Currently Amended) The method of Claim 7, wherein said ~~pH-dependent~~ GPR4 signal is measured in a cAMP luciferase reporter assay in stable cell lines expressing said GPR4 related ~~protein~~ polypeptide under an acidic shift.

17. (Currently Amended) The method of Claim 7, wherein said candidate compound decreases said ~~pH-dependent~~ GPR4 signal, thereby antagonizing said GPR4 related polypeptide.

18. (Currently Amended) The method of Claim 7, wherein said candidate compound increases said ~~pH-dependent~~ GRP4 signal, thereby agonizing said GPR4 related polypeptide.